REMARKS

Claims 1, 2, 4, 5 and 19 are pending in this application. Claims 3 and 6-18 have been canceled without prejudice or disclaimer. Selected claims have been amended to clarify the invention, and not for reasons of patentability. Claim 19 has been added, and does not contain new matter.

Reconsideration and allowance of all the rejected claims are respectfully requested in view of the following remarks.

Claim Rejections Under 35 U.S.C. §103

Claims 1 and 3-5 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Betzner et al. (U.S. Patent Application No. 2002/0071475 A1) in view of Schmermund (U.S. Patent No. 6,341,892 B2). Further, Claims 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Betzner and Schmermund, as applied to claims 1, 3-5, and 18 above, and further in view of JP 61179764 A. Applicants traverse these rejections as follows.

Claims 3 and 18 has been canceled, thereby rendering their rejection moot.

The Applicants respectfully submit that neither Betzner et al. nor Schmermund, alone or in combination, teaches or suggests, a flexible wired circuit board having a plurality of layers formed in a generally rectangular, flat, strip-shape, and having a central portion and end portions, for temperature measurement, the layers including: a conductor layer having two sides, a base insulating layer having two sides, wherein one side of the conductor layer is formed on one side of the base insulating layer, wherein the central portion is generally narrow and the end portions are relatively rectangular, flat and widened, wherein the conductor layer is formed from a metal

foil having a proportional relation between temperature and specific electric resistance, wherein the conductor layer is formed as a predetermined pattern in which a relatively widened main wiring portion, a sensor-wiring portion extending continuously from one lateral end of the main wiring portion, and a connector-wiring portion extending continuously from the other lateral end of the main wiring portion are formed in one piece, the sensor-wiring portion includes a temperature detecting portion formed of sensor wiring in a relatively thin, S-shaped form, and wherein the temperature detecting portion is formed on the base insulating layer at one of the generally rectangular, flat, widened end portions of the base insulating layer, and the connector-wiring portion is formed at the other of the generally rectangular, flat, widened end portions of the base insulating layer, as substantially recited in independent Claim 1.

Betzner et al. disclose a sensor, which incorporates circuit technology (see Betzner et al., the Abstract). Betzner et al. further disclose a substrate 14 including a probe portion 14b, and a base portion 14a (see Betzner et al., Figures 1 and 2; paragraph [0022]). Furthermore, Betzner et al. disclose conductive copper traces 16a and 16b, which terminate at the base portion 14a in the form of elliptical trace pads 18a and 18b (see Betzner et al., Figures 1 and 2, paragraph [0022]). Additionally, Betzner et al. disclose that crimp terminals 20a and 20b are secured to the substrate 14, while simultaneously being electrically connected to the conductive traces 16a and 16b by a crimp pad 24, which is aligned over a respective trace pad 18a and 18b, and then the crimp points 26 are thrust penetratingly through the base portion 14a, and are bent back against the opposite side of the flexible circuit substrate to form the sensor assembly (see Betzner et al., Figures 1 and 2, paragraph [0023]).

Betzner et al. also discloses a sensor 22 including a thermistor mounted as a separate member from the traces 16a and 16b (see Betzner et al., Figures 1 and 2, paragraph [0022]). However, the sensor 22 of Betzner et al. does not have a temperature detecting portion which is integrally formed as a conductive layer along with a main wiring portion and a connector wiring portion, as in the present invention.

Schmermund discloses a platinum resistance thermometer probe 12 including a stem 13 having a substantially cylindrical shape, and a narrow temperature sensing tip 14 that is an extension of the stem 13 (see Figures 1 and 2; col. 2, lines 20-26). Schmermund further discloses a temperature sensor 15, located on the narrow temperature sensing tip 14, formed on a substrate 17, the substrate 17 having an identical width throughout (see Figure 2; col. 2, lines 27-31). The probe 12, including the narrow temperature sensing tip 14, is inserting into a housing 26, the housing 26 itself includes a temperature sensing tip 28, and keeps the internal environment in a contaminant free partial vacuum (see col. 1, line 46 to col. 2, line 5). The space inside of the housing 26 that is not occupied by the temperature sensor 15 is filled with fine granular particles 33 (see Figures 1 and 2; col. 2, lines 47-64), which provide mechanical support to the temperature sensor and reduces convection.

Schmermund discloses that the resistor 16 has a serpentine pattern, however, the resistor also has the same width as the pads 18 and 19 (see Figures 1 and 2). Therefore, the resistor 16 of Schmermund does not include a relatively widened main wiring portion and a relatively thin temperature detecting section, as in the present invention.

Contrary to the devices of Betzner et al. and Schmermund, in the present invention, while the main wiring portion is relatively widened in order to secure a sufficient electrostatic capacitance, the temperature detecting portion is formed of a single sensor wiring in a relatively thin, continuous S-shaped form, i.e., the sensor wiring is arranged in a small space in an extended manner, to obtain the benefit of providing an accurate measurement of a specific electric resistance.

Furthermore, the Applicants respectfully submit that Schmermund is non-analogous art, and one of ordinary skill in the art of flexible wired circuit boards would not have looked to platinum resistance thermometers in order to achieve the claimed features of a temperature detecting portion for a flexible wired circuit board for use in automotive temperature control.

Further, the Applicants respectfully submit that Schmermund does not teach or suggest the widened end portions that the Examiner alleges. The entire width of the substrate 17 is identical throughout (the Examiner's designated areas A-C are identical in width), and there is no differentiation between a narrower central portion and wider end portions as in the present invention.

The Applicants also respectfully submit that Betzner et al. and Schmermund, are complete within themselves, and that there is no motivation to combine Betzner et al. with Schmermund to achieve the claimed features of the present invention, without the use of impermissible hindsight by the Examiner.

Specifically, the Applicants respectfully submit that there is no motivation to change the device of Betzner et al. to include a serpentine wire pattern from a platinum resistance probe as

in Schmermund. Although the Examiner acknowledges that Betzner et al. does not disclose the temperature detecting portion of the present invention, Schmermund, on whom the Examiner relies, does not disclose these features either, and fails to make up for the deficiencies in Betzner et al.

In particular, one of ordinary skill in the art of flexible wired circuit boards would not have looked to the calibratory rigid platinum probe of Schmermund to combine with a sensor assembly including crimped ends, in order to achieve the claimed features of the present invention. The sensing tip 14 of Schmermund is meant to be a narrow tip with serpentine wiring, whereas the base portion of Betzner et al. is meant to include elliptical copper trace pads 18a and 18b which are used to electrically connect crimp terminals 20a and 20b, which have been thrust penetratingly through the base portion 14a. Thus, there is no motivation to combine these two references to achieve the claimed features of the present invention.

Further, assuming *arguendo*, that Betzner et al. and Schmermund were combined, the resulting combination would not achieve the claimed features of the present invention, and in fact, would make at least, the Betzner et al. device unworkable. The addition of the rigid sensing tip 14, housed in a contaminant free environment of Schmermund instead of the crimped terminals 20a and 20b, which are secured to the elliptical conductive traces of Betzner et al., would cause Betzner et al. to be inoperable, since the rigid probe is not meant to have a crimp terminal thrust penetratingly through its wiring, and would still not reach the claimed features of the present invention. The Examiner is reminded that if the proposed modification renders the prior art invention being modified unsatisfactory for its intended purpose, then there is no

suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (see §MPEP 2143.01).

The Examiner is further reminded that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (See MPEP §2143) The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Since there is no suggestion or motivation, either in Betzner et al. or Schmermund, or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings, the Examiner has failed to establish a *prima facie* case of obviousness. Further, since the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Furthermore, the Examiner is reminded that "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (*In re Kahn*,

441 F.3d 977, 988 (CA Fed. 2006) cited with approval in *KSR Int'l v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007)).

Accordingly, Claim 1 is not obvious over either the individual or the combination of the Betzner et al. and Schmermund references, and the rejection of Claim 1 under 35 USC §103 should be withdrawn.

Further, since Claims 4 and 5 depend from Claim 1, they are also patentably distinguishable over either the individual or the combination of the Betzner et al. and Schmermund references, for the reasons cited above with respect to Claim 1.

With respect to Claim 2, the addition of the JP 61-179764A reference does not make up for the deficiencies of Betzner et al. and Schmermund, and thus should be allowed at least by virtue of its dependency from Claim 1, but also because it is distinguishable over the applied prior art.

New Claim 19 is also distinguishable over the prior art, and thus is in condition for allowance.

If the Examiner believes that there is any issue which could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants hereby petition for any extension of time that may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 50-0951.

Respectfully submitted,

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